

CLAIMS

1. A method for managing network elements in a communications network comprising:

establishing a hierarchy of geographical areas in the communications network, where an area at a higher level of the hierarchy includes a plurality of areas at a lower level of the hierarchy;

5 representing each network element in a geographical area at a first level in the geographical hierarchy; and

summarizing the representation of network elements at a second level in the geographical hierarchy, higher than the first level of

10 the geographical hierarchy.

2. The method of claim 1 wherein the establishment of a hierarchy of geographical areas includes establishing a hierarchy of n levels of geographical areas in the network, wherein each n th level geographical area includes a plurality of $(n-1)^{th}$ level geographical areas, and wherein the summarization of network elements includes summarizing the representation of network elements at $(n-1)$ levels of geographical areas.

3. The method of claim 1 wherein the management of the communication network includes monitoring the condition of the network elements, wherein the representation of network elements in a geographical area includes representing the condition of network elements, and wherein the summarization of network elements at a higher level in the geographical hierarchy includes triggering an alarm

at the second hierarchical level in response to the condition of a network element represented at the first level.

4. The method of claim 3 wherein the communication network is managed in real-time, and further comprising, following the representation of each network element in a geographical area:

 updating the condition of network elements represented in the first level of the geographical hierarchy; and

 wherein the summarization of network elements at a higher level in the geographical hierarchy includes setting an alarm at the second hierarchical level in response to changes in the condition of network elements.

5. The method of claim 4 wherein the representation of each network element in a geographical area includes representing a network element as a first icon on a map of geographical areas on the first level of the geographical hierarchy.

6. The method of claim 5 wherein the representation of each network element in a geographical area includes representing the condition of a network element with a first icon that varies with respect to the status of the network element.

7. The method of claim 6 wherein the summarization of network elements at a higher level in the geographical hierarchy includes representing the status of a plurality of network elements as a

5 second icon on a map of geographical areas on the second level of the geographical hierarchical.

8. The method of claim 7 further comprising, preceding the summarization of network elements at a higher level in the geographical hierarchy:

5 establishing a set of rules defining the meaning of the second icon.

9. The method of claim 8 wherein the summarization of network elements at a higher level in the geographical hierarchy includes the second icon being the coloration of geographical area.

10. The method of claim 8 wherein the summarization of network elements at a higher level in the geographical hierarchy includes summarizing the status of a plurality of network elements with textual annotation.

5 11. The method of claim 7 wherein management of the network includes the installation of network elements into the communications network, and wherein the representation of each network element in a geographical area includes entering the latitude and longitude of a network element upon installation into the network.

12. The method of claim 8 wherein network management is supervised, and further comprising:

creating supervisor identities; and

wherein the establishment of rule-sets includes
5 establishing a set of rules for each supervisor identity.

13. The method of claim 8 wherein the establishment of rule-sets includes defining a set of rules responsive to conditions selected from the group consisting of power source status, software corruption, hardware failure, environmental factors, and intrusion into
5 the network elements.

14. The method of claim 1 wherein the communications network is a fixed wireless service (FWS) including base stations and remote units, and wherein the representation of each network element in a geographical area includes representing the geographical positions
5 of network base stations and remote units.


15. A method for determining the failure of a network element in a communications network comprising:
representing the communications network as a hierarchy of geographical areas, where an area at a higher level of the hierarchy
5 of geographical areas includes a plurality of areas at a lower level of the hierarchy of geographical areas;
detecting the failure of network elements;
sending an alarm to the higher level in the geographical hierarchy summarizing the failure of the network elements; and
10 responsive to the alarm, identifying and locating failed network elements at a lower level of the geographical hierarchy.

16. The method of claim 15 wherein the representation of the communications network as a hierarchy of geographical areas includes representing the communications network as a hierarchical arrangement of geographical maps wherein a map at a higher level of 5 the hierarchy of geographical areas includes a plurality of maps from the lower level of the hierarchy of geographical areas.

17. The method of claim 16 wherein the sending of an alarm to the higher level in the geographical hierarchy summarizing network element failures includes defining an alarm trigger that is responsive to the network element failures.

18. A method for determining the failure of a network element in a communications network comprising:

monitoring a geographical map which summarizes the status of a plurality of network elements in the communications

5 network;

on the map display, receiving an alarm representing the failure of network elements; and

responsive to an alarm, narrowing the scale of the map to geographically locate failed network elements.

19. A system for presenting a communications network comprising:

a plurality of network elements having geographic locations;

5 a database including the geographical locations of the
network elements;
an application connected to said database to organize the
communications network into a hierarchical arrangement of geographic
areas, wherein each network element is located at a lower level in the
10 hierarchy of geographical areas, said application summarizing the
representation of a plurality of network elements at a higher level in the
hierarchy of geographical areas;
15 a display having an input connected to said application to
present a modifiable display of network elements as represented in
multiple levels in the hierarchy of geographical areas; and
a supervisor interface connected to said application, said
supervisor interface providing commands to said application to modify
said display.

20. The system of claim 19 wherein the communications
network is a fixed wireless system (FWS); and
wherein the network elements are base stations and
remote units.

21. The system of claim 20 wherein said base stations
and remote units have an operational and a non-operational status;
wherein said database is updated on the status of each
said base station and remote unit;

5 wherein said application summarizes the status of said
base stations and remote units at the higher hierarchical level; and
wherein said display presents said application summaries.